LACOMBE P   *FR 2364-453
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Measurement of blood plasma coagulation time - using optical
density method, suitable for oxalated or citrated plasma

Electronic apparatus for measuring coagulation time of
blood plasma comprises a photoelectric cell and a chrono-
meter, stopped by examining by a suitable logic the first
three derivatives to appear.

ADVANTAGE
Suitable for oxalated plasma which reacts with Ca ions and
stops clocks prematurely in simple apparatus.

DETAILS
Citrate as blood anticoagulant does not interfere with clott-
ing time assays, but oxalate reacts with Ca^{++} ions to give
an insoluble calcium oxalate making coagulation point
difficult or impossible to see. When oxalated plasma is
added to Ca^{++} the initial turbulence is used to start the tim-
ing mechanism. The Ca oxalate ppte. appears almost imm-
ediately and is complete after about 15 s.
   The coagulation itself cooperates differently in normal
and pathological plasmas. In normal plasma, coagulation
occurs pathological plasmas. In normal plasma, coagul-
ation occurs about 10-15 s after mixing and figs. 1a, 1b and
1c show the evolution of the first three derivatives of the
optical density curve. An arrow on the curve indicates the
coagulation point (the reading is suppressed in the first 5 s
after mixing or the timing mechanism would be prematurely
stopped).
   In pathological plasmas (figs. 2a, 2b, 2c) the coagulation
is delayed up to 40 s and more. The slope of the curves of
the first derivative (1a,2a) are reduced but never reach zero
(2a) and only just zero (1a). It will be seen that the second
derivative of the signal becomes negative and remains so in
normal plasma (1b), and in pathological plasma (2b) becomes
negative and then once more becomes positive. The third
derivative (1c) of normal plasma becomes positive, negative
positive and then negative.
   The third derivative with pathological plasma (2c)
becomes positive then negative and finally positive. Com-
paring 1b with 1c and 2b with 2c it will be seen that when
both of each pair of curves indicate positive values after 1c
ur 2c have indicated negative values, coagulation point has
just been reached. This set of conditions is arranged to
stop the lining mechanism and gives directly the coagul-
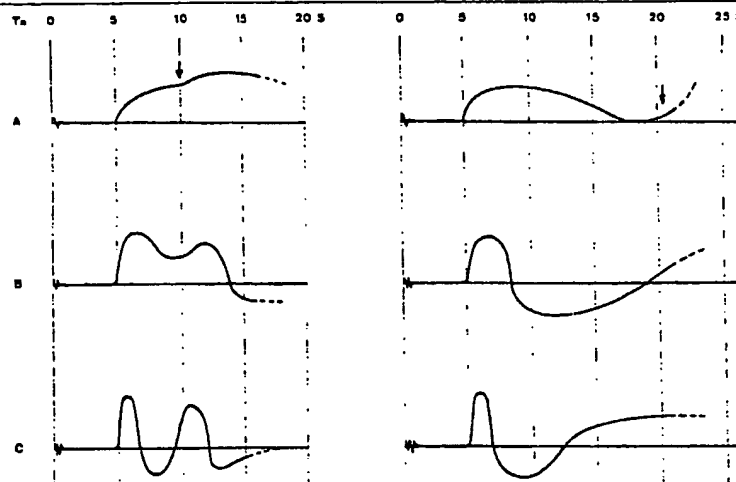ation time.(8pp288).   FR2364453+

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FIG 1   FIG 2

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